

**Notice of Allowability**

Application No.

10/620,137

Examiner

Pamela E. Perkins

Applicant(s)

KIM ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the after final amendment on 20 July 2005.
2. ☒ The allowed claim(s) is/are 12-20.
3. ☒ The drawings filed on 14 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
Michael Trinh  
Primary Examiner

### **DETAILED ACTION**

This office action is in response to the filing of the after final amendment on 20 July 2005. Claims 12-20 are pending.

Applicant's arguments, see the paper filed 20 July 2005, with respect to claims 12-17 have been fully considered and are persuasive. The rejection of claims 12-17 has been withdrawn.

### ***Allowable Subject Matter***

Claims 12-20 are allowed.

### ***Reasons for Allowance***

The following is an examiner's statement of reasons for allowance: prior art does not anticipate, teach, or suggest a method of manufacturing a vertical cavity surface emitting laser (VCSEL) where a vertical stack structure having a substantially planar top surface, includes a top mirror, a bottom mirror, a cavity region disposed between the top mirror and the bottom mirror and including an active light generation region, at least one of the top mirror and the bottom mirror having a layer with a peripheral region oxidized into an electrical insulator as a result of exposure to an oxidizing agent, wherein the vertical stack structure defines two or more etched holes each extending from the substantially planar top surface to the oxidized peripheral region; and passivating each of the etched holes by an overlying moisture penetration barrier.

For example, Thornton (6,208,681) discloses a method of manufacturing a vertical cavity surface emitting laser (VCSEL) where a vertical stack structure having a substantially planar top surface is formed including a top mirror, a bottom mirror, a cavity region disposed between the top mirror and the bottom mirror and including an active light generation region, at least one of the top mirror and the bottom mirror having a layer with a peripheral region oxidized into an electrical insulator as a result of exposure to an oxidizing agent, wherein the vertical stack structure defines two or more etched holes each extending from the substantially planar top surface to the oxidized peripheral region. However, Thornton does not disclose, anticipate, teach, or suggest passivating each of the etched holes by an overlying moisture penetration barrier.

The prior art made of record in this action does not anticipate, teach, or suggest a method of manufacturing a vertical cavity surface emitting laser (VCSEL) where a vertical stack structure having a substantially planar top surface, includes a top mirror, a bottom mirror, a cavity region disposed between the top mirror and the bottom mirror and including an active light generation region, at least one of the top mirror and the bottom mirror having a layer with a peripheral region oxidized into an electrical insulator as a result of exposure to an oxidizing agent, wherein the vertical stack structure defines two or more etched holes each extending from the substantially planar top surface to the oxidized peripheral region; and passivating each of the etched holes by an overlying moisture penetration barrier.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571) 272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PEP

  
Michael Trinh  
Primary Examiner  
Act SPE